



www.mtclimatechange.us

Catalog of State GHG Reduction Policy Options

Prepared by The Center for Climate Strategies (CCS) for the Montana Climate Change Advisory Committee (CCAC) and its Scientific Advisory Panel (SAP) and Technical Work Groups (TWGs) based on actions undertaken or considered by all US states.

Tables of Policy Options:

Table	Sectors Covered
1	Residential, Commercial, Industrial (RCI)
2	Energy Supply (ES)
3	Transportation and Land Use (TLU)
4	Agriculture, Forestry and Waste Management (AFW)
5	Cross Cutting Issues - Reporting, Registries, Education (CC)

Key to Future Rankings of Options in the Tables that Follow:

Potential Emission Reductions <u>1/</u>	Potential Cost or Cost Savings <u>1/ 2/</u>
High (H): At least 1 Million Metric Tons (MMT) carbon dioxide equivalent (CO ₂ e) per year by 2020 (~1% of current MT emissions)	High (H): \$50 per Metric Ton CO ₂ e (MTCO ₂ e) or above
Medium (M): From 0.1 to 1 MMT CO ₂ e per year by 2020	Medium (M): \$5-50/MTCO ₂ e
Low (L): Less than 0.1 MMT CO ₂ e per year by 2020, or 1 MMT CO ₂ e by 2050	Low (L): Less than \$5/MTCO ₂ e
Uncertain (U): Not able to estimate at this time	Uncertain (U): Not able to estimate at this time
<u>1/</u> Several measures may overlap in terms of emissions reductions and/or cost impacts. Estimates assume measures would be implemented independently from other measures.	
<u>2/</u> Costs are denoted by a positive number. Cost savings (i.e., “negative costs”) are denoted by a negative number.	

Definition of “Priorities for Analysis”:

- **High:** High priority options will be analyzed first.
- **Medium:** Medium priority options will be analyzed next, time and resources permitting.
- **Low:** Low priority options will be analyzed last, time and resources permitting.

Notation of Options:

Options will be marked with an asterisk (*) at a later date to indicate options that are at least partially “base case” policies, i.e., that have been considered or undertaken at some level in Montana.



www.mtclimatechange.us

Catalog of State-Level GHG Reduction Policy Options Transportation and Land Use

Prepared by The Center for Climate Strategies (CCS) for the Montana Climate Change Advisory Committee (CCAC) and its Scientific Advisory Panel (SAP) and Technical Work Groups (TWGs) based on actions undertaken or considered by all US states.

Key to Future Rankings of Options in the Table that Follows:

Potential Emission Reductions <u>1/</u>	Potential Cost or Cost Savings <u>1/ 2/</u>
High (H): At least 1 Million Metric Tons (MMT) carbon dioxide equivalent (CO ₂ e) per year by 2020 (~1% of current MT emissions)	High (H): \$50 per Metric Ton CO ₂ e (MTCO ₂ e) or above
Medium (M): From 0.1 to 1 MMT CO ₂ e per year by 2020	Medium (M): \$5-50/MTCO ₂ e
Low (L): Less than 0.1 MMT CO ₂ e per year by 2020, or 1 MMT CO ₂ e by 2050	Low (L): Less than \$5/MTCO ₂ e
Uncertain (U): Not able to estimate at this time	Uncertain (U): Not able to estimate at this time
<u>1/</u> Several measures may overlap in terms of emissions reductions and/or cost impacts. Estimates assume measures would be implemented independently from other measures.	
<u>2/</u> Costs are denoted by a positive number. Cost savings (i.e., “negative costs”) are denoted by a negative number.	

Definition of “Priorities for Analysis”:

- **High:** High priority options will be analyzed first.
- **Medium:** Medium priority options will be analyzed next, time and resources permitting.
- **Low:** Low priority options will be analyzed last, time and resources permitting.

Notation of Options: Options will be marked with an asterisk (*) at a later date to indicate options that are at least partially “base case” policies, i.e., that have been considered or undertaken at some level in Montana.

Table 3 - Transportation and Land Use (TLU)

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
TLU-1	PASSENGER VEHICLE GHG EMISSION RATES					
TLU-1.1	VEHICLE TECHNOLOGY					
1.1.1	Tailpipe GHG Emission Standards					
1.1.2	ZEV/LEV-2 Implementation					
1.1.3	R&D on Low-GHG Vehicle Technology (e.g., fuel cell)					
1.1.4	Add-on Technologies (Low Friction Oil, Low-Rolling Resistance Tires)					
TLU-1.2	VEHICLE OPERATION					
1.2.1	Enforce Speed Limits					
1.2.2	Vehicle Maintenance, Driver Training					
1.2.3	Transportation System Management					
TLU-1.3	INCENTIVES & DISINCENTIVES					
1.3.1	Procurement of Efficient Fleet Vehicles					
1.3.2	Feebates (state-specific or regional)					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
1.3.3	CO ₂ -based Registration Fees					
1.3.4	Tax Credits for Efficient Vehicles					
1.3.5	Vehicle Scrappage					
TLU-2	LAND USE AND LOCATION EFFICIENCY					
TLU-2.1	GENERAL					
2.1.1	Infill, Brownfield Re-development					
2.1.2	Transit-Oriented Development					
2.1.3	Smart Growth Planning, Modeling, Tools					
2.1.4	Targeted Open Space Protection					
TLU-2.2	INCREASING LOW-GHG TRAVEL OPTIONS					
2.2.1	Make Full Use of CMAQ funds					
2.2.2	Improve Transit Service (frequency, convenience, quality)					
2.2.3	Transit Marketing and Promotion					
2.2.4	Bike and Pedestrian Infrastructure					
2.2.5	Expand Transit Infrastructure (rail, bus, BRT)					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
2.2.6	HOV lanes					
2.2.7	“Fix-it-First”					
2.2.8	Transit Prioritization (signal prioritization, HOV lanes)					
2.2.9	Telecommute and Live-Near-Your-Work					
2.2.10	Car Sharing					
2.2.11	E-Commerce					
TLU-2.3	INCENTIVES & DISINCENTIVES					
2.3.1	Commuter Choice/Parking Cash Out					
2.3.2	VMT Tax					
2.3.3	Pay As You Drive Insurance					
2.3.4	Increased Fuel Tax (w/ targeted use of revenue towards travel alternatives)					
2.3.5	Location-Efficient Mortgages					
2.3.6	Congestion Pricing (or tolls) (w/ targeted use of revenue towards travel alternatives)					
2.3.7	Parking Pricing or Supply Restrictions					
2.3.8	Transit Repositioning					
2.3.9	Transit Pricing Incentives					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
2.3.10	VMT/GHG Offset Requirements for Large Developments					
2.3.11	Benefits for Low GHG Vehicles (preferential parking, use of HOV lanes)					
TLU-2.4	FUEL MEASURES					
2.4.1	Low-GHG Fuel Standard (e.g., renewable)					
2.4.2	Low-GHG Fuel for State Fleets (e.g., CNG, biodiesel)					
2.4.3	Biofuel Expansion (biodiesel, CNG, LPG, cellulosic ethanol)					
2.4.4	Alternative Fuel Infrastructure Development					
TLU-3	FREIGHT					
TLU-3.1	VEHICLE TECHNOLOGY					
3.1.1	Vehicle Technology Improvements (e.g., aerodynamics)					
3.1.2	R&D on Low-GHG Vehicle Technology					
3.1.3	Low-sulfur Diesel					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
3.1.4	Black Carbon Control Technologies (e.g., use of particulate traps, other complementary technologies)					
TLU-3.2	VEHICLE OPERATION					
3.2.1	Freight Logistics Improvements/GIS					
3.2.2	Enforce Speed Limits					
3.2.3	Improve Traffic Flow					
3.2.4	Increased Size & Weight of Trucks					
3.2.5	Increase the Number of Rest Areas					
3.2.6	Pre-clearance at Scale Houses					
3.2.7	Truck Stop Electrification					
3.2.8	Enforce Anti-Idling					
TLU-3.3	INCREASING LOW-GHG TRAVEL OPTIONS					
3.3.1	Intermodal Freight Initiatives					
3.3.2	Feeder Barge Container Service					
TLU-3.4	INCENTIVES & DISINCENTIVES					
3.4.1	Procurement of Efficient Fleet Vehicles (public, private or other)					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
3.4.2	Incentives to Retire or Improve Older Less Efficient Vehicles					
3.4.3	Maintenance and Driver Training					
3.4.4	Increased Truck Tolls or Highway User Fees					
TLU-4	INTERCITY TRAVEL: AVIATION, HIGH SPEED RAIL, BUS					
4.1	High-speed Rail					
4.2	Integrated Aviation, Rail, Bus Networks					
4.3	Aircraft Emissions					
4.4	Airport Ground Equipment					
TLU-5	OFF-ROAD VEHICLES (CONSTRUCTION EQUIPMENT, OUT-BOARD MOTORS, ATVS, ETC)					
5.1	Incentives for Purchase of Efficient Vehicles/Equipment					
5.2	Improved Operations, Operator Training					
5.3	Maintenance Improvements					
5.4	Increased Use of Alternative Fuels or Low Sulfur Diesel					